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works of the great Stagyrte and his successor Theophrastus, are interpreted by these authors, and in their wake by students generally, as applying to ichthyic remains found in stratified rock, whereas the original texts speak only of living fishes which burrow in the mud, and are able to survive for a considerable time out of water. Thus the passages were understood by ancient commentators, and the idea that they refer to things fossil has clearly been 'read into' them by modern historians.

Lyell's statement of the matter is as follows, omitting criticisms:

Aristotle, in his treatise on respiration, speaks distinctly of fossil fishes; and his pupil, Theophrastus, alluding to such fishes found near Heraclaea, in Pontus, and in Paphlagonia, says that they were either procreated from fish-spawn left behind in the earth, or had gone astray from rivers or from the sea, for the sake of food, into cavities of the earth, where they had become petrified.

Nothing could more completely miss the sense of the original than the above paragraph. The title of Theophrastus's essay, 'On Fishes that Exist out of Water,' is alone sufficient to exclude the notion of petrified remains. Besides, we have both ancient and modern confirmation of the accounts relative to the taking of 'dug mullets' and loaches in the same localities. Pomponius Mela, it is true, rejects the reports as improbable fish stories, but Strabo, Pliny, Polybius and others corroborate them at all points; and in our own time the facts have been verified *de novo*.

What Pliny says on this matter is interesting. He mentions a kind of loach, which Cuvier thinks is identifiable with the *Cobitis fossilis* of Linnæus, and observes that it 'frequents the waters near the banks of the rivers and makes holes for itself, in which it lives, even when the water retires and the bed of the river is dry; for which reason these fishes have to be dug out of the ground, and only show by the movement of the body that they are still alive.' Nor does he omit in the same connection ('Nat. Hist.,' IX., 83) to quote Theophrastus's statement that 'in Paphlagonia, also, land fishes are dug up which are most excellent eating.'

Strabo is equally explicit in his account of the 'dug mullets' of Narbonne, long esteemed one of the principal wonders of the Keltic coast. Thus we read in the fourth book of his 'Geography' as follows:

There is a lake near to Ruscino [on the site of which now stands Perpignan], and a little above the sea a marshy district full of salt-springs, which supplies 'dug mullets'; for whoever digs two or three feet, and plunges a trident into the muddy water, will be sure to take the fish, which are noteworthy for their considerable size; they are nourished in the mud like eels.

It is unnecessary to prolong the discussion, or to point out that the views of ancient masters in natural science have been needlessly disparaged through faulty interpretation of the original sources. We are concerned only with restoring to the latter their literal meaning. A word may be said, however, concerning the formidable array of geological doctrines attributed by Lyell, in the work quoted, to Pythagoras, of the sixth century, B. C. Of this almost mythical personage we know very little for certain, of his doctrines nothing at all. Those ascribed to him are not Pythagorean, but Stoic; not of the hoary sixth century before our era, but Augustan; not altogether Greek, but in large part Roman; and in order to form a clear historical perspective it is necessary that these facts be recognized.

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SCIENTIFIC NOTES AND NEWS.

THE Central Branch of the American Society of Naturalists and affiliated societies are holding their third annual meeting at Chicago from March 31 to April 1. Professor John M. Coulter, chairman of the Central Branch, will deliver the annual address at the dinner on March 31. Special programs have been arranged for the zoologists, botanists, anatomists and physiologists. We hope to print abstracts of the papers, a considerable number of which are announced on the preliminary program.

It is announced that the first John Fritz gold medal will be conferred upon Lord Kelvin. This medal is awarded by a joint committee of the American Institute of Electrical

Engineers, the American Society of Mechanical Engineers, The American Society of Civil Engineers and the American Institute of Mining Engineers to the man most representative of, and eminent in, scientific advance in the engineering field.

PREVIOUS to his departure for England, to assume the chair of medicine in the University of Oxford, a dinner will be given to Dr. William Osler at the Waldorf-Astoria, in New York City, on May 2.

DR. H. P. BOWDITCH, professor of physiology at Harvard Medical School, has recently visited the universities of the Pacific coast.

WE learn from *The Botanical Gazette* that Sir Joseph Hooker retired from the editorship of the *Botanical Magazine* at the close of 1904, after forty years of service. He is succeeded by Sir W. Thiselton-Dyer.

WE learn from *Nature* that Professor W. J. Sollas, F.R.S., has been elected a member of the Athenæum Club under the rule which empowers the annual election by the committee of nine persons of distinguished eminence in science, literature, the arts, or for public services.

PROFESSOR L. C. HERDT, assistant professor of electrical engineering at McGill University, has been awarded the honorary title of officier d'académie, by the French government.

MR. J. E. S. MOORE has been appointed director of the Cancer Research, which is carried out in connection with the Royal Infirmary.

MR. R. R. KELLY, assistant professor in the department of engineering at the University of South Dakota, Vermillion, S. D., is resigning in order to join the staff of the Symms & Powers Company, heating and ventilating engineers, of Sioux Falls, S. D.

G. E. COGHILL, Ph.D., professor of biology at Pacific University, has been elected secretary of the Oregon Academy of Sciences.

THE Bakerian lecture of the Royal Society was delivered on March 23, by Dr. Horace T. Brown, F.R.S., who took as his subject 'The Reception and Utilization of Energy by the Green Leaf.'

A MEDAL in commemoration of M. Alfred Cornu will be struck by the French Physical Society.

It is proposed to erect a memorial in Jena to Professor Ernest Abbe in commemoration of his services to optical science and industry. Subscriptions should be sent to the treasurer, Dr. Gustav Fischer, Jena.

THE centenary of the birth of the Russian mathematician W. J. Buniakowsky was celebrated at St. Petersburg on December 16, and on December 29 the centenary of the birth of K. Schallbach was commemorated in Berlin.

AN intercollegiate course in Appalachian Geology will be given under the direction of several instructors, as follows: July 3-8—Professor W. B. Clark, of the John Hopkins University, on 'The Tertiary and Cretaceous Strata of the Coastal Plain of Maryland.' July 10-15—Professor W. M. Davis, of Harvard University, on 'The Folded Paleozoic Strata of the Susquehanna-Juniata District of Pennsylvania.' July 17-22—Professor T. C. Hopkins, of Syracuse University, on 'The Horizontal Paleozoic Strata and Glacial Features of Central New York.' July 24-29—Professor H. P. Cushing, of Western Reserve University, on 'The Faulted Crystalline and Paleozoic Rocks of the Little Falls District, N. Y.' July 31-August 5—Professor J. Barrell, of Yale University, on 'The Metamorphic and Triassic Rocks of Western Connecticut.' This course is intended for men who have already some knowledge of general geology, including field work. The party will meet in Baltimore on Monday, July 3. The work of each week may be taken separately. It may be necessary to limit the number of members in the first week; preference will be given to those who take the entire course. A circular giving fuller details of the course can be had of Professor Clark on about March 10.

THE position of chief of the Division of Chemistry, Hygienic Laboratory, Public Health and Marine Hospital Service, will be filled by civil service examination on April 26. The salary of this position is \$3,200. Competitors are not assembled for examina-

tion, but will be graded for education, experience and publications. Examinations are also announced by the civil service commission on April 26-27, for forest assistants in the Bureau of Forestry, Department of Agriculture, at salaries of \$1,800, \$1,400 and four at \$1,200; on April 12, for assistant in the Division of Biological Survey, U. S. Department of Agriculture, at a salary of \$900; and on April 19, for hydrographic aids, municipal water supply, U. S. Geological Survey, at salaries of \$1,000 to \$1,500.

THE Fourth International Ornithological Congress, under the presidency of Dr. R. Bowdler Sharpe, of the British Museum, will be held in London from June 17 to 12 inclusive. Drs. J. A. Allen, Chas. W. Richmond and Leonhard Stejneger, and Messrs. F. M. Chapman, D. G. Elliott and Robert Ridgeway represent the United States on the general committee.

WE have received the official program of the second International Botanical Congress, which will be held at Vienna on June 11-18.

THE fifteenth German Geographentag will be held at Danzig on June 13-15.

WE learn from the *American Mathematical Journal* that the firm of J. A. Barth in Leipzig has undertaken to publish a directory, compiled by F. Strobel of Jena, of all living mathematicians, physicists, astronomers and chemists. A new edition is to appear every two years.

REPLYING to questions in the House of Commons, Mr. Brodrick, secretary of state for India, said that the latest figures on the plague in India showed that for the four weeks ending February 28 in the Bombay presidency there were 13,475 deaths, and that for the four weeks ending March 11 in the rest of India there were 123,550 deaths. The total number of deaths from the plague in the Bombay presidency from January 1 to February 28 were 28,721, and in the rest of India, from January 1 to March 11, 318,178. Mr. Brodrick said he had communicated with the viceroy of India, looking to a remedy for this deplorable loss of life, and that it had been decided to send out a scientific expedition to in-

vestigate the causes. The expedition will start immediately.

MR. ARTHUR ERWIN BROWN, secretary of the Zoological Society of Philadelphia, in a recent address before the Academy of Natural Sciences said: "The 'Origin of Species' was first published in London on November 24, 1859. On March 27, 1860, Charles Darwin was elected a correspondent of the academy. On May 8 he wrote to his life-long friend, Charles Lyell: 'This morning I got a letter from the Academy of Natural Sciences of Philadelphia announcing that I am elected a correspondent. It shows that some naturalists there do not think I am such a scientific profligate as many think me here.' It appears from the record that this academy was the first among scientific societies to confer its honors upon Charles Darwin after the publication of his immortal work."

It was announced at the last monthly meeting of the London Zoological Society that the total number of visitors to the garden during the year 1904 had been 706,074, exceeding the numbers in 1903 by no less than 48,866. The receipts for admission at the gates during the year amounted to £17,063, being an increase of £1,151 as compared with the year 1903. The total number of fellows elected during the year had amounted to 249, showing an increase of 31 as compared with the previous year. The total number of fellows on the roll on December 31 last was 3,557, being the largest number ever recorded in the history of the society.

THE tenth International Anti-alcohol Congress is to be held at Buda-Pesth from September 12 to 16. Among the questions proposed for discussion are: The influence of alcohol on the resisting power of the human and animal organism; is alcohol a food? alcohol and sexual life; alcohol and the penal law; alcohol and physical fitness, with special reference to military training; the organization of the temperance movement; school and education in the struggle against alcoholism; the reform of the liquor trade; and the corrupting influence of the trade in spirituous liquors on the natives of Africa.

WE learn from the London *Times* that the annual meeting of the Anthropological Institute of Great Britain and Ireland was held on January 21, Mr. H. Balfour, the retiring president, in the chair. The annual report of the council stated that the year had been one of steady progress, the number of new fellows and the net increase being greater than for any year since 1898. The total membership now stood at 442. The question of physical deterioration had lately been engaging public attention, and the council had prepared a memorial to Lord Londonderry recommending the organization of an anthropometric survey and the appointment of an advisory committee, and making other suggestions. An amendment to strike out of the report a proposal that the publication *Man* should be paid for by fellows in order to assist in meeting the annual deficit was rejected after prolonged discussion, and the report was approved. The treasurer's report stated that the income from subscriptions for the past year was the highest on record. Notwithstanding this highly satisfactory increase of the institute's principal source of income, there had been an excess of expenditure over income in every year of the 1900-04 period except 1902. The chief cause of these deficits appeared to have been the increase in the cost of the annual publications. The council accordingly proposed to effect economies in their publications, and to ask members to pay for their copies of *Man*. The report was agreed to. Professor W. Gowland, F.S.A., was elected president for the current year.

UNIVERSITY AND EDUCATIONAL NEWS.

ACCORDING to the daily papers the articles of agreement under which it is proposed to combine the Massachusetts Institute of Technology and Harvard University have been made public. They provide for a joint school of industrial science, to be known under the present name of the Institute of Technology, to be governed by an executive board of nine members, of which three shall represent Harvard, and to be maintained by present institute funds, augmented by the income of all funds of the Lawrence Scientific School, by three-

fifths of the net income which may accrue from the Gordon McKay bequest, amounting to several millions, and by the income of all property which Harvard may hereafter acquire for the promotion of instruction in industrial science. The new institute is to occupy a site on the Cambridge side of the Charles River, near the present Stadium.

THE Catholic University of America will receive a bequest of \$100,000 from Miss Helen Tyler Gardiner.

MR. ANDREW CARNEGIE has agreed to give a \$50,000 library to the Washington and Lee University on condition that the university raises an endowment of \$50,000 for maintaining the new library.

Two new buildings are about to be erected for the Rensselaer Polytechnic Institute. One is for the departments of mathematics and drawing and the other for the department of chemistry. Both will be strictly fire proof. Their cost will be about three hundred thousand dollars. A motion is before the Troy Common Council to make a handsome stone approach to these buildings by extending Broadway.

THE board of regents of the University of Michigan at its February meeting voted to invite bids for the erection of an addition to the physical laboratory according to plans already prepared.

A BILL has passed the North Dakota legislature creating a state bacteriologic and pathologic laboratory, to be located at the State University and School of Mines, and to be under the control of the university trustees and the professor of bacteriology at the university, who is to be the director.

It is announced that the Russian Ministry of Public Instruction will at once undertake the elaboration of a plan for a compulsory system of primary education. Representatives of the schools in the principal cities are invited to participate in the drawing up of the plan.

GEORGE V. N. DEARBORN, Ph.D., M.D. (Columbia), has been promoted to the full professorship of physiology in the Tufts College Medical and Dental Schools.